

EXHIBIT 17

connected. The **DOOR BYPASS** key switch is provided to allow maintenance personnel access to the work area without disconnecting power. This bypass switch only allows access during Manual and Calibration modes.

Light Curtain

Some machines are equipped with an optional light curtain. The light curtain is redundant and self-checking. The control signals from the light curtain are included as safety devices in the safety circuit. On machine power up, the light curtain must be reset by turning the key switch to 'Reset' for at least $\frac{1}{2}$ second.

Exhaust Fan

Some machines are equipped with an exhaust fan. The exhaust fan is provided to exhaust fumes from the work area. The exhaust flange should be connected to an appropriate ducting system that is capable of receiving 150 CFM (cubic feet per minute). Insufficient airflow through the exhaust system generates an error.



NOTE: Installed safety devices vary from model to model.

Operation

Startup Procedure

- 1) Check the fluid and air pressures.
- 2) Close all doors and turn the *DOOR BYPASS* key switch to the OFF position (If applicable).
- 3) Engage the *EMERGENCY STOP* button.
- 4) Turn on main power using the red rotary switch at the front or rear of the machine (Black "rocker" switch on PVA250™ and PVA250E™ models).

Light Tower Operation

Three stacked indicator lights and a buzzer are used to indicate the status of the machine. The lights are green, amber, and red with green on the bottom, amber in the middle and red on top. The buzzer is located below the green light. The lights are visible from all sides of the machine. The indicators operate as follows. The light tower may help you be your first clue for solving a problem.

- o The green indicator is on when the machine is in cycle and producing parts. It is off at all other times.
- o The amber indicator is on when the machine is in Auto Cycle and ready to produce parts, but can not cycle due to an external material handling problem (no incoming parts or no room to unload parts). PVA750™ and PVA2000C™ models are equipped with a light tower but not an amber light.
- o The red indicator is on steady when the machine is not in Auto Cycle due to operator intervention. It will flash when the machine is in cycle, but cycle is halted due to a machine problem. It is off at all other times.
- o The buzzer cycles with the red indicator during machine errors.

Table 4 – Light Tower & Buzzer Status



<i>State</i>	<i>Red</i>	<i>Amber</i>	<i>Green</i>	<i>Buzzer</i>
Cycle Stop	ON	OFF	OFF	OFF
Auto Cycle	OFF	ON	OFF	OFF
In Cycle	OFF	OFF	ON	OFF
Machine Error	FLASH	OFF	OFF	FLASH

Exhaust Verification

Once the workcell has initialized, most models will perform an exhaust flow verification process. If initialization fails, consult the section Startup Errors on page 44. During this process, and whenever the workcell is in operation the exhaust flow rate is monitored via the on board pressure differential switch. The workcell must exhaust at a rate no less than 150 cubic feet per minute, otherwise a critical fault will occur shutting the motors down. The verification process will also attempt to evacuate any potential vapors that may already exist in the work area of the work-



About PVA

PVA is a global manufacturer of conformal coating systems, innovative fluid dispensing solutions and precision valve technology. Throughout the changing global manufacturing landscape, PVA remains committed to providing our customers with exceptional products and global support.

Complimentary Array of Products

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Industries

Electronics • Automotive • Aerospace • General Packaging • Medical Device • Renewable Energy Consumer Goods • Military / Defense

Product Guide

Selective Conformal Coating & General Dispensing

- PVA350 Tabletop Selective Coating System
- PVA650 Selective Coating System
- PVA2000 Selective Coating System
- PVA3000 Automated Dispensing System
- PVA6000 Coating and Dispensing System

Microelectronics – (Underfill, Paste, Encapsulant)

- PVA350SMT Tabletop SMT Dispensing System
- PVA650SMT SMT Dispensing System

Meter-mix Dispensing

- MX3000 / MX4000 Gear Pump Meter-Mix Systems
- MX1000 / MX1500 Rod Displacement Meter-Mix

Optical Bonding

- PVA710 Optical Bonding System

Dispensing Consumables

- Needles and Tips
- Static Mixers

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PVA Product Overview

Valve Options

- FCM Series Micro Dispense
- FCS Series Atomized Spray
- FC Series Needle Dispense
- SVX Auger Valve
- MV Series Shot Metering
- CA Series Diaphragm Valves
- PC Series 2-part Mixing Valves
- VPX Series Volumetric Pump
- CF Series Film Coating (Airless) Valves



Manual/Benchtop Dispensers

- Valve/Syringe Controllers
- Valve/Syringe Stands
- Custom Solutions



Inline Curing Ovens

- IR2000 Infrared Heat Curing Chamber
- UV1000 Ultraviolet Light Curing System
- UV2000 Ultraviolet Light Curing Chamber
- UV5000 UV Flood Lamp Curing System



Custom Automation

- Selective Soldering
- Odd-form Pick and Place
- Automated Screw Driving
- Automated Optical Inspection



Material Delivery Tanks / Pumps

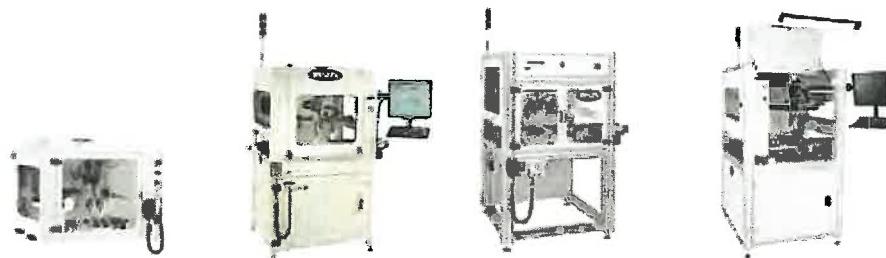
- PVA-1LBCA One Pound Bottle Pre
- PVA-1LTUV One Liter Bottle Pressure Reservoir
- PVA-2LTUV 2 Liter Bottle Pressure Reservoir
- PVA10G Ten Gallon Stainless Steel Pressure Tank Assembly
- DPCC Fluid Delivery System
- PVA-1GPU One Gallon Hydraulic Metering Pump
- CP Series Pumps for Medium to High Viscosity Materials

Fume Filtration

- FX800 Fume Filtration System



Selective Coating Equipment Comparison



	PVA350	PVA650	PVA2000	PVA6000
Repeatability	.025mm	.025mm	.025mm	.025mm
Max Speed	500mm/sec	670mm/sec	670mm/sec	670mm/sec
Encoder Resolution	5 micron	5 micron	5 micron	5 micron
Gantry Drive System	Closed Loop DC servo, Ballscrew Drive			
Max Acceleration	0.25 g	0.5 g	0.5 g	0.5 g
Travel				
Initial XY Axis Travel	400mm x 400mm	500mm x 500mm	500mm x 500mm	500mm x 500mm
Z Axis Travel	90mm	90mm	100mm	100mm
Board Handling				
Conveyor Type	N/A	Flat Edge Belt or Chain	Flat Edge Belt or Chain	Flat Edge Belt or Chain
Min Conveyor Width	N/A	50mm	50mm	50mm
Above Board Clearance	70mm	70mm	62mm (standard) 100+mm (optional)	75mm (standard) 100+mm (optional)
Under Board Clearance	80mm	70mm	100mm (standard)	100mm (standard)
Transport Height	N/A	940mm to 965mm	940mm to 965mm	940mm to 965mm
Conveyor Protocol	N/A	SMEMA	SMEMA	SMEMA
Standard Board Sizes	Up to 380mm Depending on Options	50mm-457mm Depending on Options	50mm-457mm Depending on Options	50mm-457mm Depending on Options
Facilities				
Power	120 to 240 VAC, 50/60hz			
Air Supply	<10 CFM at > 80 PSI (5.5 bar) Filtered @ 5microns	<10 CFM at > 80 PSI (5.5 bar) Filtered @ 5microns	<10 CFM at > 80 PSI (5.5 bar) Filtered @ 5microns	<10 CFM at > 80 PSI (5.5 bar) Filtered @ 5microns
Footprint	945mm x 832mm x 794mm	1219mm x 941mm x 1607mm	1219mm x 1097mm x 1651mm	1219mm x 1257mm x 1687mm
Exhaust	300cfm minimum	300cfm minimum	300cfm minimum	300cfm minimum
Features				
Four-Axis	Option	Option	Option	Option
Bar Code Reading	Option	Option	Option	Option
Passive Programming	Option	Option	Option	Option
Camera	Option	Option	Option	Option
XY Fiducial Camera	Option	Option	Option	Option
Part Shuttles	Option	Option	Option	Option
Exhaust Blower	Option	Option	Option	Option
PathMaster Software	Standard	Standard	Standard	Standard
Offline Programming	Standard	Standard	Standard	Standard
Onboard Computer	Option	Standard	Option	Standard
Flow Monitoring	Option	Option	Option	Option
Dual/Multi Head Tooling	Option	Option	Option	Option

PVA Patents

PVA holds four US patents, including the only TRUE four-axis motion capability featuring patented tilt and servo rotation control (4 axis patent - #6447847), and the atomized spray valve technology (ES Valve patent - #6523757).



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System Debug

Project: Specx 2015
Serial #: W3367

Date: 5-1-01
Programmer: 215

MS. B. 1.4. 49
1940-1941

Head 4:		
Z-slide (y/n):		
Stroke Adjust: (y/n)		
Bonney (y/n):		
Size 7 or 10:		
Valve:		
Atom Air rings:		
O-ring material:		
Laser Height (y/n):	Y6	
Laser Pointer (y/n):	Nn	
Prog. Camera (y/n):	Yes ✓	
Head lighting:	Standard 3 Tines 2 Valve ✓	
Custom:	No	
Double toner:	No	
Other:		
Connectors:	None	
Type: (Ball Chain)		
Direction (L/R, R/L):		
Conveyor length:		
Conveyor height:		
SMEMA:		
Bi-directional (y/n):		
Upstream/downstream:		
PIP Sensors:		
Auto with edl.:		
Hand crank width (in):		
Lift and locate:		
Board locators:		
Board stops: (Type):		
Quantity on front rail:		
Quantity on back rail:		
Part Fixtures:	Yes ✓	
Flex Fixtures:	Yes ✓	
Part present sensor:	No	
Custom Fixtures:	No	
Work height:		
Grip/Stern:	Hand Stern	
Hand start:	Yes ✓	
Start zero force:	No	
Double zero force:	No	
Controller: (y/n):	No	
Push button:	Yes ✓	

Grinding:			
Doors:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Interlocks: (y/n)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Light curtain:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Light tower:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Process Controls:			
Flow Monitor:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Remote transmitter: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Gen. style: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Low level:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Auto Crossover:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Computer:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Porta Out: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Bar code reader:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Art. Box: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Data Logging:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Needle Calibration:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Black light	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Cycle rate (sec.)	Unknown		
Air Requirements:			
PSI:	80 - 100 <input checked="" type="checkbox"/>		
Dry: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Lubricated:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
CFM:	<10		
Ventilation:			
Minimum CFM:	300 <input checked="" type="checkbox"/>		
Fitting dia.: (4" or 5")	5" <input checked="" type="checkbox"/>		
PVA Blower: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Blower pit diameter:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Exhaust switch: (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Supply Voltage:			
120VAC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
220VAC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Frequency:	60 Hz <input checked="" type="checkbox"/>		
Current:	12A <input checked="" type="checkbox"/>		
Phase:	Single <input checked="" type="checkbox"/>		
Coating Materials:			
Material A:	SKC/NVH		
Material B:	None		
Solvent:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Keltec O-rings? (y/n)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		